

1 only a 63,000. Then if you don't have any, then you're at
2 like 5,780. Because you're taking fiber away from that main
3 access and spreading it around through the rest of the
4 parts. Your strengths are dropping.

5 Q So that column of enhanced multi-axis or rather QE
6 9106, let's say, that's primarily what was used for the
7 composite tubing?

8 A The 9100 based fabric is the primary fabric in
9 the --

10 Q The primary fabric in the composite tubing?

11 A Correct.

12 Q Let me again clarify so we are clear.

13 A You're starting to confuse me.

14 Q What I was trying to get a sense of is, if we
15 prepared a similar document for the composite tubing, what
16 information would we see on that document? And what I
17 understood you to say is if we looked on the QE 9100, that's
18 the type of fiberglass material that was being used in the
19 composite tubing. So that would be the relevant information
20 for composite tubing?

21 A Yeah. I mean the basis -- basic architecture of
22 the Hardcore based tube, okay, is primarily fiber running
23 longitudinally down the tube. Okay. Then the next most
24 amount of fabric would be in the plus minus 45 direction.
25 And then it's reasonably light in the architecture in a pure

1 hoop, meaning just running radially around the pile.

2 Now, depending on the size of the pile and the
3 diameter, depending on how much material went into it.

4 Q Okay. You were giving us some sense of the
5 quantity when you said fibers running longitudinally,
6 50 percent, 60 percent?

7 A How about a rough?

8 Q Rough, yeah.

9 A You're probably 60, 60 to 65 percent
10 longitudinally, like truly longitudinally. Maybe another
11 call it like 12 percent in each of the plus or minus 45s and
12 then only down in the like five, seven percent or whatever
13 that adds up to. Very little in the radial, in what's
14 called the zero to 90.

15 (Hemphill Deposition Exhibit Nos. 4 and 5 were
16 marked for identification.)

17 BY MR. WERNER:

18 Q I have had color photocopies of photographs marked
19 respectively as Exhibits 4 and 5. Have you had a chance to
20 look at them?

21 A Yes.

22 Q Do you recognize the product that's depicted in
23 those photographs?

24 A Yeah. It looks like a Hardcore pile.

25 Q And what is it that you see there that would

1 identify it as a Hardcore as opposed to anyone else's pile?

2 A Besides just that we are very familiar with what
3 they look like. There is -- the architect, the way the
4 fabric print through is on the surface that you can see on
5 the outside surface of them as well as you can see some
6 distribution media at the end.

7 Q Particularly in No. 4, there is a little bit of
8 background on the top part of the photograph. Does that
9 help you identify a project?

10 A I couldn't even tell you.

11 Q Is there anything about the photographs that
12 indicate to you whether Hardcore, in fact, did the concrete
13 filler or whether a contractor or owner on site did a
14 concrete filler?

15 A From this picture, I couldn't tell you.

16 Q I'm going to represent to you that we had earlier
17 in the litigation process introduced these photographs
18 specifically during the course of the hearing on the
19 preliminary injunction, indicating that these photographs
20 were taken at the Bellmawr Municipal Marina project in April
21 of 2003?

22 A Um-hmm.

23 Q Was Hardcore involved in a project at the Bellmawr
24 Municipal Marina on or about April of 2003?

25 A Yeah, we made piles for the Bellmawr project. And

1 I think earlier I alluded to those. It was a job in New
2 Jersey I think you wrote at the corner of your paper there
3 when you asked which ones did we fill piles for.

4 Q So the Bellmawr -- I'm sorry. Go ahead.

5 A I think I already answered.

6 Q So the Bellmawr, New Jersey, project is one of the
7 projects in which Hardcore actually filled the tubes before
8 sending them out to the site?

9 A Correct.

10 Q If we could look at 5. And we look at the blowup
11 at the end of the tube. The red mesh material, is that the
12 distribution media that you have been discussing?

13 A Correct.

14 Q As we move to about 4:00 o'clock, there is some it
15 looks like white plastic on the inside of the tube. Do you
16 see that?

17 A Yeah. Correct.

18 Q Can you just tell me what that is, sir?

19 A That's what we call a mega channel.

20 Q What was the function of the mega channel?

21 A The mega channel was the way that we get the resin
22 into the distribution media. Those channels. And you can
23 kind of see it. It is kind of hard to see but you can see
24 that they are actually in an omega shape. If you're
25 familiar with the omega shape, it is kind of a flat, kind of

1 circle, flat. There is a little opening at the bottom of
2 it. And we have this material extruded for us or had this
3 material extruded for us.

4 And what that did is when you put -- inside the
5 mold, the omega channel is up against the distribution
6 media. And it allowed us to -- the omega channels went
7 the full length of the tube. And so we would insert
8 plastic tubing into the ends of the omega channels, that
9 tubing would be connected to the source of the resin.
10 So the resin under vacuum would run down these tubes, go
11 through that little slit in the bottom of the omega
12 channel and get into the distribution media and then
13 work its way through. We tended to just leave them in
14 there because it added extra grip.

15 Q Was there any type of add mixture at all that was
16 used by Hardcore in the concrete mix?

17 A In this mix, no. From my -- actually, in my
18 experience, and you went through my history, I and a lot of
19 the industry would rather control shrinkage of concrete
20 through the use of keeping the water to cement ratio very
21 low and using what's known as a plasticizer.

22 Q Water to cement ratio and then a plasticizer?

23 A Yeah.

24 Q What do you mean when you use the phrase
25 plasticizer?

1 A If you have ever played with cement, you know like
2 that the more water you add, the more liquidy it gets. Like
3 if you mix it and it's reasonably dry, it's all lumpy and
4 you can hardly move it around. I think everybody has played
5 with cement at some point. The amount of water -- like
6 cement is made out of cement, stones and water and sand.

7 The ratio of cement powder to water ultimately
8 determines the strength of the concrete and how much it also
9 is going to shrink. But the lower the water to cement
10 ratio, the stiffer and stiffer and more thick it is. Okay.

11 So a lot of times, people add water to it, it
12 makes it nice and fluid and moves around and flows
13 good for you. But as it cures, it shrinks really bad
14 and gets all the cracks. That's why most people's
15 basement floor is all cracked because the contractor
16 just got the concrete real wet, it was easy to move
17 around, then it shrank and cracked.

18 If you keep the water to cement ratio low, you
19 end up with a material that is kind of really thick and
20 lumpy and it will like stick to the shovel. Well,
21 obviously, you can see that it would be very hard to
22 pour it down a 50, 60 foot long tube or into a big
23 concrete form.

24 So they have a product which is called
25 plasticizer. And what the plasticizer does is, I don't

1 know how it does it, but it basically turns -- you put
2 plasticizer into this really thick, low water cement
3 ratio. The concrete is all thick and pasty like peanut
4 butter. You put the plasticizer in and it turns it
5 almost like a liquid. It gets real runny. You can then
6 pour it and it will flow real easy and do all that.

7 But then some sort of chemical reaction occurs
8 and the plasticizer disappears and it goes back to being
9 all stiff again. But it didn't shrink because you
10 didn't have too much water in there.

11 So the only stuff we would have -- that I would
12 have, quote, added to the concrete, we used a
13 plasticizer. We used a low water to cement ratio
14 concrete with a lot of plasticizer in it to get it to
15 flow down into the --

16 Q If I could ask you to take a look at 4, which is
17 the series of tubes there. Yes.

18 At least on two of the tubes, we see some of the
19 distribution media showing at roughly at 5:00, 6:00 o'clock.
20 In around there.

21 Is that the way that the tube would have come from
22 Hardcore or does that indicate that something has happened
23 to the tube between the time it left Hardcore and got to the
24 site?

25 A No. Actually, what that represents is the way

1 that Hardcore filled it when we had the tube filled, we had,
2 again, as I said, a few projects that we filled them.

3 We had a big, giant dirt pile behind our plant
4 that was at about a 45 degree angle. And we would lay
5 the tubes on the dirt pile and block one end of them and
6 we left the tubes a little bit long, like maybe a foot
7 longer than what they were needed. Because when they
8 first come out of the mold, the end is all rough and not
9 very attractive. And you're not going to send it that
10 way.

11 To fill the tube, when we filled it with
12 concrete, we would lay it on this big pile of dirt we
13 had and then they would be at like a 45 degree angle and
14 then we would drive a cement truck up the other side of
15 the pile and with this runny concrete that had a
16 plasticizer in it, basically fill the tube up.

17 So if you can manage what would happen, at the
18 very top of the tube, because it's on an angle when
19 you're filling it like with the concrete, you get kind
20 of an angular -- it doesn't, you know, fill to the top
21 because it spills out. So when we cut the extra off,
22 you end up sometimes with that little bit showing.

23 Q The procedure that you have just described for me,
24 that is putting the tubes on a dirt embankment and then
25 backing up a concrete truck, is that what you did on each of

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1 the three or four occasions that you filled it?

2 A Yes.

3 Q The concrete truck, are we talking about you
4 contracted with some concrete supplier to provide the
5 concrete?

6 A Yeah. Yes.

7 Q To what extent or how, then, did you get involved
8 in actually controlling the mixture if it was coming from a
9 vendor of sorts?

10 A Other than, you know, typically the concrete
11 mixture, if you saw, you provided me a document earlier that
12 I believe was document number two, that had a specification
13 in it for the concrete mixture would typically be specified
14 in the contract document. So we would go to the cement
15 supplier and say we need a cement mix of 5,000 pounds with a
16 water/cement ratio of no more than .4. We wanted the
17 plasticizer added, you know.

18 And then most times we would also -- you would
19 have to take cylinders and test it, get the concrete
20 tested to make sure that it was as strong as you said it
21 was.

22 Q All right. On Exhibit No. 5, the blowup of one of
23 the tubes. Again, the gap we see between the concrete and
24 the inner surface of the tube, that's just as a result of
25 this pouring process that you were describing to me?

1 A Right. Like I said, if you can picture it, it
2 really was like that. That's really when it was poured,
3 that was the top of it. So when it got cut off, there was a
4 little bit of extra.

5 Q On that photograph, if we go up to the roughly
6 2:00 o'clock, it looks like a crack that's in there. Do you
7 see that?

8 A Yeah. I can't tell if that's a crack or from
9 where -- it might be from when they sawed the end of it.
10 You can see all the saw marks. There is like saw marks on
11 it.

12 Q So those indentations are saw marks?

13 A Yeah. It looks like there is saw marks. Then
14 typically also you can see that -- the saw couldn't get all
15 the way through. So the rough -- there is a rough area
16 right here. When it finally got small enough, they just
17 broke the end of it off.

18 Q That's all I have for that, then.

19 MR. WERNER: Can we just have about a two
20 minute break?

21 (A brief recess was taken.)

22 BY MR. WERNER:

23 Q I wanted to just explore with you briefly what
24 happened at the time that Hardcore wrapped up its business
25 operations; and, specifically, I'm interested in who, if

1 anyone, is in control of the facility itself, the physical
2 facility now?

3 A Maybe, the best thing, if I can maybe just do this
4 as a narrative without --

5 Q That will make my job much easier.

6 A I know this is an area where I don't think I'm
7 going to get tripped up on a question. And let me just give
8 you the narrative and it might answer a lot of other
9 questions and save a lot of time.

10 Q Go ahead.

11 A Hardcore was involved in a project to build wind
12 fairings for the Bronx Waystone Bridge in New York City. The
13 biggest composite project ever to hit the face of the earth.
14 Almost a million pounds of composites was made. Cutting
15 edge project. A lot of things. It was about almost a
16 \$6 million contract for Hardcore over the course of a year.

17 At the end of the day, the long and short of it,
18 Hardcore got in a bit of a piss with the contractor over
19 money and our bank and us getting paid. And the bank that
20 we had our line of credit with, we had used up all of our
21 line of credit to fund the project, to be working on it.
22 The contractor wasn't paying. The bank is asking, you know,
23 we got to start getting paid for our loan, we got to start
24 doing something. We were in tough financial straits. The
25 bank came down on us. The contractor used that as an

1 opportunity to go, oh, well, you're getting sued, we are
2 getting sued, everybody is getting sued. The long and short
3 of it was that it forced the lack of -- the contractor was
4 still owed Hardcore in excess of two million bucks for the
5 work done, material and labor on that project. In June of
6 2004, Hardcore was forced to file Chapter 11 bankruptcy to
7 stave off, you know, stave off all the wolves.

8 From June into -- through November 2004, Hardcore
9 was operating under a Chapter 11 bankruptcy protection. The
10 contractor was using this whole bankruptcy thing as a means
11 to say we are not going to pay because all this has got to
12 get settled out, to don't know who we owe money to, who does
13 Hardcore owe for supplies, we don't want to have to pay
14 them. It was a long and involved procedure and it is all
15 public record.

16 But at the end of the day, in a Chapter 11
17 bankruptcy proceeding, because our bank that we had our
18 big line of credit with, because they, quote, have a
19 lien on like everything that we had, had first lien on
20 all our assets, all of our -- everything. Every month
21 at the bankruptcy hearing had to say, there was some
22 sort of procedure where they acknowledged that we could
23 use the assets for another month under bankruptcy
24 protection.

25 And it basically came down to they weren't able

1 to go after the contractor for the money that was owed
2 to them from our line of credit while we were basically
3 under Chapter 11 bankruptcy protection.

4 So in November of 2004, all these negotiations
5 kind of broke down and the bank, Artisans' Bank here in
6 Wilmington, decided that they weren't going to allow us
7 use of our, quote, assets anymore. Like they were not
8 going to allow the use of their assets that they had
9 claim on anymore.

10 And so what that did is procedurally and
11 effectively forced us into Chapter 7. So we went from
12 Chapter 11, and because we were not allowed to use their
13 assets anymore, we didn't have any assets to use, we
14 were forced into Chapter 7 proceedings.

15 So at the end of it was like the first week of
16 December, we had to leave our facility at Lambsons Lane,
17 leave all the equipment basically, it was Chapter 7, and
18 we were told, get your personal belongings and leave the
19 premises. And a Chapter 7 hearing was scheduled for
20 like the first or second week of January.

21 So basically the building just got locked up.
22 Everything was sitting there. We all left, you know,
23 took our personal crap off the walls of our offices and
24 went home.

25 At the Chapter 7 bankruptcy hearing, the

1 bankruptcy Judge said that because so much money was
2 owed to Artisans', the million plus dollars of our line
3 of credit was owed to Artisans', the value of all the --
4 because they had had an estimate done of all the hard
5 assets that were there. Since the hard assets were less
6 than what was owed to Artisans' and they were the
7 secured lienholder, the Judge basically said this is not
8 a bankruptcy case and threw us out of bankruptcy.

9 The exact same day that this occurred, because
10 then basically we were thrown out of bankruptcy so we
11 are allowed to go back and do whatever we wanted to do.
12 It was just between us and Artisans'.

13 The exact same day, the landlord had a hearing
14 scheduled, an emergency hearing scheduled with I think
15 it's like small claims court. Wherever like real estate
16 disputes are held in Delaware. It's like the Justice of
17 the Peace or something. And basically because we hadn't
18 been paying our rent, because we were, you know, in
19 protection and different things, but now we weren't,
20 went to the JP Court and said, hey, they are so far
21 behind on their rent, we are evicting them and claiming
22 everything that's there as payment for bank rent. And
23 that got, you know, there was no way to contest that.

24 And so the long story short, the landlord
25 seized all the physical property including -- this is

1 the rub -- business records, everything, and disposed of
2 them. And did not let anybody have anything back.

3 So the only reason these records exist is
4 because I had copies of them personally because of this
5 case since I'm a personal defendant. Nothing else
6 exists.

7 Q You indicated that the landlord seized the
8 business records. Do you know the name of the landlord, by
9 the way?

10 A Harvey Development.

11 Q Harvey, H-a-r-v-e-y?

12 A Yeah. Development Company.

13 Q Are they based somewhere in Delaware?

14 A Yeah.

15 Q Wilmington?

16 A Generically, Wilmington, I guess.

17 Q Did you ever receive any information as to what
18 Harvey Development Company did with the business records?

19 A Only anecdotally because there had already been
20 other Court cases and stuff before this. Evidently they are
21 at the bottom of the Cherry Island landfill.

22 Q What about in terms of the machinery, the
23 equipment, that sort of thing, do you have any idea what
24 happened to that?

25 A Evidently -- like I say, anecdotally, they sold

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1 some of it off and the rest they, in trade, a local rigging
2 company came and dismantled a lot of stuff and in trade took
3 like our overhead crane and some of our other heavy stuff in
4 trade for dismantling it and getting it out of there.
5 That's what I know secondhand.

6 Q Asked a different way. Did you personally or any
7 group that you're involved with bid on, purchase or somehow
8 acquire any of the equipment, any of the machinery, any of
9 the records, anything that the landlord had seized?

10 A No. Not at all.

11 Q Have you had any employment since the doors of
12 Hardcore were closed?

13 A I have been doing some consulting work and some
14 general contracting type stuff. Quite honestly, this case.
15 The still outstanding up until even a couple months ago,
16 there was still a case with the contractor going on. There
17 is still Court cases floating around out there. My --
18 needless to say, in the industry, I'm at the moment persona
19 non grata. The industry is afraid that if they touch me too
20 closely, that somehow bad stuff is going to come haunt them.

21 Q The consulting work you're doing, what field or
22 what industry is that consulting work in?

23 A The composites industry as well as I'm doing some
24 construction stuff. Just to make ends meet. It's not been
25 a good year. Let me put it that way.

1 Q The consulting work you're doing, is it for a
2 particular manufacturer?

3 A I have done some work for V2 Composites. I have
4 done some engineering stuff for an engineering company, HNTB
5 up in New York. I have done some stuff for the Triborough
6 Bridge & Tunnel Authority. What else? There is a company
7 called Seaward. I did some stuff for them.

8 Q What have you done for Seaward?

9 A They made some -- they were doing some stay-in-
10 place form work on a bridge up in Connecticut. I helped
11 them. Because, again, I'm the holder of a patent, one of
12 the patents that we discussed earlier on how to make
13 composites. It's for -- not tubes, but you needed that
14 methodology to be able to execute a project they had.

15 Q Have you done any work for Seaward since leaving
16 Hardcore Composite in '04-05 that involved design of,
17 manufacture of, marketing or sale of composite tubes?

18 A They started the project up in Connecticut that
19 you're talking about. I know where you're heading. It
20 initially started out having composite tubes that they were
21 going to drive hollow and fill with concrete.

22 Q Okay.

23 A Okay. What happened is the -- there was a major
24 engineering mistake and they're driving steel piles up
25 there. So there is no composite piles on the job. The

1 contractor -- not the contractor. The DOT evidently, when
2 they took the first soil boring, believe this or not, it is
3 where our tax dollars go, from 1918 and used them in the
4 design and never took accurate ones. When they got up there
5 on site, they found out that the depth of the water and the
6 mud was twice as deep as they thought it was. So the
7 composites weren't a viable option. So they are using
8 composite stay-in-place form work and then driving big steel
9 pipe piles through it.

10 Q So are the composites just guides or are they
11 ultimately going to provide some protection to the steel?

12 A No. If I can describe it. It's like -- think of
13 like a big shoe box. At the end -- what they are building
14 up there is a bridge protection system. And at the end of
15 the bridges, there needs to be something to stop the ship,
16 like if an errant ship crashes, instead of hitting the
17 bridge, it crashes into this big kind of triangular-shaped
18 box that's filled with concrete. It's like 14 feet high
19 and, you know, each side of the triangle is about 40 feet
20 long. A big, giant thing. And that big concrete mass is
21 held up on pilings in the water. Like they are up
22 underneath it like this.

23 Q Okay.

24 A The composite that got made is just flat panels
25 that held the concrete in place when they poured it. And

1 then it stays there so that it keeps the ice and stuff and
2 the water off the concrete. It's got nothing to do with the
3 tubes at all.

4 Q So the composite product that we are talking about
5 has nothing to do with the structural integrity of the --
6 well, it doesn't provide any load support?

7 A Yeah. It's got nothing to do with it. What it
8 does is, its primary function is to support the weight of
9 the wet concrete until the concrete gets hard and then the
10 concrete supports its own weight at that point. But it's
11 like a flat panel. It's basically like these gigantic empty
12 shoe boxes that they fill with concrete. No tubes involved
13 at all. Sorry.

14 Q Any of the entities --

15 A They were supposed to be. But the design messed
16 up and they didn't.

17 Q Have you worked with any manufacturers of
18 composite tubing since leaving Hardcore Composites?

19 A No.

20 Q Other than this -- oh, I'm sorry. Go back to
21 Seaward. You told me about this project up in Connecticut.
22 Is there any other work you have done with Seaward other
23 than the Connecticut project?

24 A No. That was it.

25 Q Now, I need to go back a little bit in time to --

1 I guess it was 1997 when you started at Hardcore DuPont.
2 And you were telling me a little bit about the bridge
3 project, which was the first major project that you got
4 involved in.

5 A Correct.

6 Q When did that actually -- well, let's go into
7 construction. When did it actually begin and site work
8 start?

9 A Actually, it is kind of funny. A week before I
10 was supposed to start, because I ended up having to like
11 work my old job and my new job for a week because of the
12 timing of it. So it's basically right as soon as I got
13 there.

14 Q And by the time you came on, then, Hardcore DuPont
15 was already utilizing this distribution media in the
16 manufacture and creation of its composite tubes?

17 A They were using that at times and other things.
18 They were kind of jumping back. They were kind of jumping
19 back. They had been using it since, like I said, back in
20 like '92 or something. But they kept changing the way they
21 were trying to make the tube. Because what had occurred, if
22 this can help clear, because I know I'm trying to cut down
23 on the questions here, is from when the Hardcore DuPont
24 Composites, up until the time they hired me, was really more
25 into like kind of R&D and really figuring out some uses for

1 these products. It's again, the same time your client
2 started getting involved in the whole idea of using
3 composites as pilings and stuff. It was kind of a new
4 thing. The government was funding research.

5 And so what was happening is they were still
6 trying to figure out ways how to make them, what do they
7 need to be like, what's the properties have to be, how
8 are you going to do them.

9 And so Hardcore DuPont, up until they hired me,
10 was really going back and forth where like this week
11 we'll make them this way, next week we'll make them this
12 way. This week we'll go back to the way we made them
13 the first time and change this.

14 I think I used the word robust, robust and
15 economical the first time I -- when we first started
16 talking here. One of the things that I was tasked with
17 doing was organizing the engineering group and going,
18 okay, let's pick a way that we have been doing and start
19 refining this way so that we can -- it can become
20 reproducible and a profitable item as opposed to like an
21 R&D science project.

22 Q All right. When was the first time that Hardcore
23 DuPont actually delivered a tube or piling or whatever to
24 this project? Was that within a week of your getting on the
25 project?

1 A No, not necessarily. Because we built the bridge
2 from scratch. Like the bridge -- when I got on the job, we
3 literally built the bridge. Meaning like I had to go, we
4 had to demolish, like Hardcore got contracted to kind of
5 demolish the old bridge, put the new, you know, cleaned it
6 out, put the new bridge in, you know, do the approach road.
7 It was a bigger thing. So it was -- there was a lag between
8 when I got involved and when we actually did the job.

9 Q And what I'm interested in specifically is in the
10 manufacture and then the delivery on site of the tube or the
11 pilings, six months after you started?

12 A Oh, no. I'd say a couple months. I'm sorry. I
13 can't recall the dates exactly. It was -- it was in the
14 summer. It was like late summer. All I know is it was
15 brutally hot.

16 Q And during that first couple of months is when you
17 came in and focused on the manufacturing process to a
18 specific process that involved the distribution media?

19 A Yeah. They had been playing with it since early
20 on. But I started focusing on it.

21 Q Did you yourself conduct any type of testing to
22 figure out which of however many ways they were doing them
23 would be the most economic and robust or maybe,
24 alternatively, I'll ask the question, what did you do to
25 come up with the idea or the conclusion that use of the

1 distribution media and that method would be the most
2 economic and robust?

3 A Well, really what part of it became is, if you see
4 these other pictures that we make sure -- No. 5, these tubes
5 in there. One of the biggest issues was that they were
6 trying initially to get the distribution media that was in
7 the tube, they were trying to suck the resin from one end of
8 the tube to the other end of the tube. As opposed to I came
9 and started working with let's get the resin, put these
10 omega channels in the whole length of the tube so that the
11 resin has a shorter distance to go so that we are not having
12 problems.

13 Because what would happen is it would start
14 sucking it partway down or go around an area and leave a
15 big dry spot and those sort of things. It's kind of a
16 hard question to answer. But it was how we got the --
17 started utilizing the distribution media in an
18 appropriate way.

19 Q You mentioned that they had been going back and
20 forth with different manufacturing processes. Was there
21 another process that did not involve any type of
22 distribution media that they were flip-flopping with at that
23 time that you got there?

24 A Yeah. One of the processes that didn't involve
25 the distribution media was that they were basically

1 pulling -- the distribution media was still involved but it
2 was on the outside of the piling. And they were trying to
3 run the resin down the outside of the pile using the same.

4 Because this distribution media, the VARTM process
5 basically relies on this distribution media in whatever
6 version you're kind of doing. Whether you're making flat
7 plates or big things or bridge decks or whatever you're
8 doing. So there is some version of this distribution media
9 involved in the VARTM process.

10 So one of the things they were trying to do was
11 run the distribution media on the outside of these
12 composite tubes. But the one thing that that tended to
13 do is make it extremely unattractive looking. If you
14 can imagine, there is the rough surface on the inside.
15 You ended up with a nice inside but a rough outside.
16 And it was, you know, the customer didn't like that.

17 Q Under that version where you were still using
18 VARTM, that the distribution media was on the outside, was
19 there any thought given to how you would lock any type of
20 filler material with the interior of the tube?

21 A At that point in time, I know -- at that point in
22 time, the whole idea of just composite piles was still
23 really so new that nobody was really giving that much
24 thought to it. I mean the -- in those early days, the
25 amount of actual let's call them piling projects that

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1 existed, but whether it was us or your client or -- really,
2 we were the only player. You couldn't even count them on
3 one hand.

4 Q Okay. I'm going to switch topics on you a little
5 bit and get a little more technical at this point.

6 As you know, we've got two patents in suit in
7 this case as to what we'll refer to generically as the
8 889 patent and the 594 patent. I'd like to start with
9 the 889 patent. I have a copy. So let me just give you
10 a copy of the 889 patent.

11 And you're familiar generally with the 889
12 patent?

13 A Yeah, I'm familiar. I will admit that I
14 flip-flopped the numbers back and forth. But, yes, I'm
15 familiar generally with both of them.

16 Q You appeared at the preliminary injunction and
17 presented argument to the Court that the Hardcore Composite
18 product did not infringe on the 889 patent. I'm just making
19 that as a statement.

20 I assume if this matter proceeds to trial,
21 you're going to be taking that position as well?

22 A Correct.

23 Q All right. Would you state for me as best you can
24 your reasons for the position that the Hardcore Composite
25 product that we have been talking about here, the composite

1 tubing, does not infringe on the 889 patent?

2 A Basically -- well, there is two parts of this.

3 And I have to say, the first is that in the Hardcore
4 experience and, you know, that's what I have to base it on
5 now, is that I have made a composite tube.

6 Q As opposed to a tube with concrete filler?

7 A Correct. As opposed to a tube with concrete
8 filler. Okay.

9 The second part is, is that when it ever has
10 concrete filler in it, it does not need to have any sort of
11 add mixture or anything in it to be able to bond to the --
12 in order for it to achieve what it's trying to achieve. It
13 doesn't need a compressive force against the outside.

14 Q And the reason being that, as far as you're
15 concerned, the Hardcore product obtains a mechanical lock by
16 virtue of the textured inner surface of the tube?

17 A Yeah. It's getting -- it's locked by just its
18 manufacturing process.

19 Q Anything else that from your perspective results
20 in the Hardcore product not infringing on the 889 patent?

21 A The other part of this part is that the use of a
22 textured inner surface existed before, like from basically
23 day one. And so there is some issue there as to, from my
24 point of view, that they existed from the very beginning of
25 its inception. And Mr. Green and Hardcore actually worked

1 together in the early years on a design team known as CPAR,
2 which was a -- that's back into like the early nineties.
3 And were part of a design team through the composite. It's
4 called the MDA now but it had another name then. But they
5 were part of a group and then continued once I got involved
6 to be working towards the design of composite pilings and
7 the acceptance and what was needed to be specified and those
8 sort of things.

9 And so this whole idea that this lock existed
10 was something that was just out there already and was
11 already being done. Called prior art or whatever.

12 Q Okay. Well, we'll take this a couple steps at a
13 time because you used several terms here. Really what I'd
14 like to go back and focus on is the infringement issue. We
15 were talking about specifically whether or not the Hardcore
16 product infringes the 889 patent. And just so that you
17 understand when I'm using that term. We will be talking a
18 little bit in terms of any challenges that you may have as
19 far as the validity of the patent. So I'm excluding for a
20 moment any items that we will be talking about in terms of
21 the validity of the patent.

22 And specifically -- I agree that you don't
23 necessarily agree that the patent is valid. But just
24 assuming that the patent is valid, whether or not the
25 Lancaster or the Hardcore product infringes the patent.

1 And we talked about two specific items that you
2 identified here.

3 A And then the other area is the actual manufacture
4 of the object, of the tube itself.

5 Q Can you describe that for me?

6 A In the 889 patent, in the first -- in the first
7 claim, the method of manufacturing, which it has, it says,
8 having fiber rovings throughout the entire thickness thereof
9 and angled with respect to a longitudinal access thereof.

10 The Hardcore type tube, which then gets filled
11 with concrete, becomes a piling, has 60 to 70 percent of its
12 fiber with no angle.

13 Q That goes back to what you were telling me earlier
14 that 60 percent plus runs longitudinally?

15 A Yes. And, again, it's made out of glass fabric as
16 opposed to being made out of continuous roving. So I also
17 feel there is some significant differences in the actual
18 claims of the patent and the first claim of the patent on
19 which the rest of the patent is based around.

20 Q I understand certainly we were talking a little
21 bit, at least in part, about a manufacturing process. But
22 when the Hardcore product, that is the tube, is actually
23 manufactured, the process is complete, it does have fibers
24 running through the tube. You're saying, though, that 60 to
25 70 percent of them are running longitudinally?

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1 A At no angle.

2 Q At no angle?

3 A At no angle. And is made out of -- and it's made
4 out of a stitch-bonded fabric as opposed to rovings. So
5 there is a number of differences in the actual construction
6 of the tube itself.

7 Q Well, since the term rovings has come up in the
8 Court opinion, why don't you tell me what you understand by
9 the use of the word rovings?

10 A In the composites industry, the word rovings is
11 typically and generally used to describe, as I was talking
12 earlier, when you have the fibers that are -- it's like a
13 bundle of glass fibers and it's then spooled up onto a big
14 reel. And then they use those rovings to do one of two
15 things. Either filament wind where I was describing where
16 they wind it around the mandril or they send it through a
17 chopper system where I have described that the rovings come,
18 where that string of glass is coming off the big spool and a
19 machine chops it and like blows it onto the part.

20 Q Now, using that as a backdrop or context, why is
21 it, in your opinion, that the Hardcore product does not
22 contain rovings?

23 A Because the Hardcore product contains stitch-
24 bonded fabric.

25 Q Are the strings in the fabric the same strings you

1 talked about as creating the rovings in the other
2 methodology?

3 A Actually, not. The way they manufacture the
4 fabrics is they take glass fiber and then pull it through
5 and then stitch it and it flattens out and forms these
6 like -- it's kind of hard to explain here. But basically
7 take and spread these fibers out and then stitch them
8 together into a fabric is the best way I could describe it.
9 It's a very different process.

10 Q I appreciate the process is different. But is it
11 your testimony that the Hardcore product does not contain
12 rovings?

13 A Yeah. It's my testimony that the Hardcore product
14 contains stitch-bonded fabric. Okay. And just to clarify
15 this further. Stitch-bonded fabric starts out as roving
16 material but then gets deroved. Deroved is the best way I
17 can describe it. And turned into fabric.

18 Q I'm sorry. I'm not going to ask you to repeat
19 that.

20 MR. WERNER: Can you read back what he just
21 said?

22 (The reporter read back as requested.)

23 BY MR. WERNER:

24 Q In your terminology, what is the process of
25 deroving?

1 A The way they make the -- the way they make the
2 fabrics, they have like hundreds of these big spools of the
3 rovings. They feed them into their weaving machine and the
4 weaving machine has a way of taking the bundle of glass
5 fabric, excuse me, the bundle of glass, spread it apart into
6 the individual fibers and then the machine takes and bundles
7 the individual fibers up into the size density that you want
8 the fabric to be in each direction. That's different in
9 stitch-bonded fabric. That's part of its whole allure.

10 So when you're done, there are no rovings left
11 in the stitch-bonded fabric.

12 Let me describe this maybe easier. If you have
13 a bag of gravel, you went and bought at the Home Depot a
14 bag of gravel. You have a bag of gravel. But when you
15 take that bag of gravel and dump it into the cement, you
16 now no longer have a bag of gravel anymore. You now
17 have gravel that's in the cement. It changed its form.
18 The stones are still stones. You still have gravel.
19 But you no longer have it in the form that you started
20 with it.

21 Q So the rovings are still in?

22 A No, the rovings disappear. Okay. A roving -- the
23 industry term for a roving is when they make these glass
24 fabrics or the glass, the fiberglass, each little piece of
25 fiberglass is thinner than your hair. Each strand of

1 fiberglass is thinner than your hair. They have a way of --
2 and they are only -- they are not the continuously forever
3 long. They have a way, when they first make it, of somehow
4 getting it together so that it's like all sticking together
5 in kind of a string. Okay. That string is called a roving.

6 Q So a roving is a string of fiberglass strands put
7 together?

8 A Put together. Okay.

9 The people that -- the way they make the stitch-
10 bonded fabric, which is what the Hardcore type pile is made
11 out of, they use that, that bundle, that spool of roving as
12 an easy way to get the fibers -- to deal with them, to
13 handle them. So they take those big bundles, you have to
14 see one of these, hundreds of these bundles of this -- rolls
15 of this roving, feed them like so there is like tons and
16 tons of filaments of these rovings coming in. And then the
17 machine that's there undoes them. So they are for the
18 rovings anymore. Now they are all the individual strands of
19 glass in a sheet coming into the machine and then the
20 stitch-binding machine kind of stitches them together and
21 makes a fabric out of them and pushes them altogether into
22 the diameter, into the size that you need. There is a big
23 difference.

24 So back to my question of what's the biggest
25 that we have on the 889 patent. Again, the 574 is the

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1 same thing, that besides all the other issues, the tube
2 itself is not the same tube. You're not describing the
3 same precursor component.

4 Q So we identified three items that go to the issue
5 of non infringement; and that is, first, the Hardcore
6 product was a composite tube, not necessarily a concrete
7 filled; second, it has to do with the lack of rovings, and
8 third was the -- well, the use of textured surface going to
9 the validity. I'm sorry. Was there a third point that you
10 made as far as non infringement?

11 A The angling.

12 Q The angling?

13 A Yeah. Even if you're going to take the position
14 that the rovings are the rovings, there is no angling, that
15 60 to 70 percent of the ones that are not angled. Even
16 though they are not rovings anymore. So fibers.

17 See, in your claim, it says, fiber reinforced
18 hollowness structure having fiber rovings. We only have
19 fibers.

20 Q I thought I gave you the patent.

21 A Yeah. I'm holding it.

22 Q Okay. Going back to the claims that we were
23 talking about it. And understand we have been talking about
24 rovings versus fibers and we talked about angling. What
25 about throughout an entire thickness thereof, would you

1 agree that the fibers, the fiberglass fibers, are throughout
2 the entire thickness of the Hardcore tubing?

3 A No. I'd actually even argue there is that because
4 we have layers of fiberglass, layers of fiberglass fabric,
5 even on that aspect of this, that's one I have never really
6 made a big issue out of. You can clearly see that there is
7 a definitive layer of glass and resin and glass and resin.
8 Down here. I'll draw a picture.

9 The white is glass, the dark is resin. It's
10 like those are the layers of the -- see right there?
11 Those are the distinct layers of fabric and resin. So
12 you do not have fibers continuously throughout.

13 Q Now, when you put in the process, as I understood
14 it, you actually drew the resin through the fiber material?
15 When you lay it out, you have continuous layers -- not
16 continuous layers but layer upon layer of fiber?

17 A No. We have -- it would be like -- let me do it
18 this way. If you had -- this is a sheet of paper and this
19 is a sheet of paper and this is a sheet of paper.

20 Q All right.

21 A Okay. And you end up, they are not part of each
22 other. Okay. They are distinctly different layers. And
23 basically what you're doing is you're binding each layer to
24 the next layer with the resin acting as adhesive to bond the
25 layer to this layer. Okay.

1 Composites work. The reason composites work is
2 that composites work just like structural concrete does.
3 The resin is just there to hold the glass in place. It's
4 the glass that's doing all the work. Okay. So you need to
5 hold the glass in a certain orientation to do it. So what
6 you have, you have this fabric separated by resin to this
7 fabric separated by resin to this fabric.

8 Q When you lay this out, before you begin the vacuum
9 process, do you actually lay out a layer of resin between
10 the two?

11 A The resin is fed in. The resin gets in between
12 the layers by the --

13 Q By the process?

14 A By the process.

15 Q Any other points that you would raise with respect
16 to non infringement of the 889 patent?

17 A The only thing, because all of the claims are
18 based off of claim one. So my issues are with claim one.

19 I think the first part of the claim is probably a
20 little generic where it says a filled structure
21 characterized by a combination of high compressive strength,
22 tensile strength, high bending load and fill load, blah,
23 blah, comprising. Then it says, you know, that's just the
24 preamble. But the compressive strength of any of these
25 composites is not high. It's only high after it's been

1 filled with concrete is what's giving the higher compressive
2 values.

3 Q All right, then. Just to supplement some of the
4 things you have already told me. We talked about the fact
5 that, as I understand it, the strands come together to make
6 a roving?

7 A Correct.

8 Q Is there a specific number or number of strands
9 that need to be together before you have a roving?

10 A I don't think I can -- I'm qualified to answer
11 that question.

12 Q And we talked about the fact that the tubing as
13 manufactured by Hardcore 60 to 70 percent of the fibers --

14 A The fibers.

15 Q The fibers. Are run longitudinally. Is that
16 critical in terms of the architecture or could you change
17 how many you have longitudinally versus at a 45 degree angle
18 or some other angle?

19 A What we -- what was found through the repetitive
20 testing and like -- basically our testing and finite element
21 analysis and some other things in designing the Hardcore
22 type tube is that you needed -- that we needed to have --
23 remember, Hardcore is focused on making a hollow tube that,
24 when used as piling, had the ability to be driven hollow.
25 Meaning a pile hammer can sit on that or a vibratory hammer

1 could shake it or an impact pile driver could actually pound
2 the top of that tube. And the tube, the composite by
3 itself, could take the driving forces and drive itself into
4 the hard soil.

5 And so through that, with those two criteria, with
6 that criteria, we found you had to have 60 percent of the
7 fibers running longitudinally, 12 percent plus 45. Twelve
8 percent minus 45 and very little in the pure going around
9 like this.

10 Q All right. We have been talking, then, about the
11 889 patent. Now I'd like to jump over to the 594 patent.
12 And ask you if it's your testimony that the Hardcore product
13 does not infringe on the 594 patent?

14 A If I can -- I will make my testimony. My
15 testimony is that the 594 patent was a result of information
16 that was -- excuse me. Is a result of information or --
17 sorry for the stuttering. I'm trying to formulate my words.

18 The 594 patent is a direct result of information
19 that, through various means, is conveyed to Mr. Green as a
20 way for him to cure the problems in the 889. And the issue
21 with the 594 that we have is that this is -- this describes
22 Hardcore's work. And, again, this is -- the 594 is the
23 patent that I claim is, you know, ownership in.

24 Q So if the 594 patent describes Hardcore's product,
25 in effect, then, Hardcore product infringes the 594 patent,

1 if the patent is valid? Is that what you're saying?

2 A Excuse me?

3 Q If the 594 patent describes the Hardcore product,
4 then the Hardcore product infringes the 594 patent if it's
5 valid?

6 A That could be -- I'm not going to affirm or deny
7 that. But that could be one conclusion that could be drawn.

8 Q Then let's switch to the basic defenses that you
9 have raised in the context of pleadings and also in
10 interrogatory answers. And we'll start with invalidity.
11 And now we'll go back to the 889 patent, although if it
12 makes sense to be talking about two of them, that's fine
13 also.

14 But let's talk about your challenges or issues
15 that you have with respect to the validity of the 889
16 patent.

17 A Okay. I just want to make sure I'm on the --

18 Do you have a question?

19 Q Yeah. Do you challenge the validity of the 889
20 patent?

21 A No, I have no -- I have no problem with -- excuse
22 me. Let me back up. My issue with the validity of the 889
23 patent is that through anecdotal and other evidence believe
24 that the basis of the 889 patent was there was an on sale
25 bar that this product was being sold, marketed and sold more

1 than a year before this patent was sold.

2 Q Why don't you tell me what evidence, information,
3 you have to support that belief?

4 A My belief, because discovery has not --

5 Q Produced documents?

6 A Produced documents. Is that the basis for these
7 patents became -- is from when Mr. Green or Lancaster
8 Composite started out doing fence posts and sign posts out
9 of small diameter composite tubes and began filling them
10 with cementitious material to stiffen them up and that there
11 was a sale to the Fish & Wildlife Commission of these posts
12 well before any of these dates of patent application. Well
13 ahead of a year before the dates of these patent
14 applications.

15 Q Are you able to place a year on that?

16 A Excuse me?

17 Q Were you able to put a year on it that you believe
18 that the sale occurred?

19 A I believe it was prior to 1992 from the dates that
20 I have been getting. But I have yet to get any discovery
21 turned over to me.

22 Q Are you aware of any witnesses or do you have any
23 witnesses that you're prepared to call at trial who will
24 testify to this sale that you believe occurred to the Fish &
25 Wildlife Commission prior to 1992?

1 A Yes, I am.

2 Q Who is that?

3 A Steve Shannon. I had been going to call Joel
4 Baron but he has since deceased. As well as I can't
5 remember the lady's name who was a secretary at Lancaster
6 Composite at the time this was going on. She was in charge
7 of marketing and sales and helping out with sales and
8 marketing as well as being a secretary.

9 Q Now, what has Mr. Shannon told you with respect to
10 a sale of either posts or sign posts to the Fish & Wildlife
11 Commission?

12 A Basically what I just reiterated, that there was
13 the sale of -- you know, this business, the Lancaster --
14 it's even in their history. The Lancaster Composite
15 business was initially a fence business that then got --
16 that Mr. Green or somebody was involved in fencing and began
17 to make a composite fence post. The early marketing
18 literature from Lancaster regards like fence post stuff.
19 You can still find it out floating on the Internet. And it
20 was fence posts with a small diameter protruding composite
21 that was filled with a grout or concrete.

22 Q And has Mr. Shannon told you that he was
23 personally present or personally observed the sale or just
24 that he has heard of it or has some information that the
25 sale may have occurred?